



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/617,253	07/11/2003	Kyung-Chool Choi	1293.1772	2437
21171 7590 02/11/2008 STAAS & HALSEY LLP SUITE 700 1201 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005				
EXAMINER CAVALLARI, DANIEL J				
ART UNIT		PAPER NUMBER		
2836				
MAIL DATE		DELIVERY MODE		
02/11/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/617,253

**Applicant(s)**

CHOI ET AL.

**Examiner**

DANIEL CAVALLARI

**Art Unit**

2836

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 November 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7, 9-13, 15 and 18 is/are rejected.
- 7) ☒ Claim(s) 8, 14, 16 and 17 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-08)  
Paper No(s)/Mail Date \_\_\_\_\_

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

The Examiner acknowledges the amendments submitted 11/21/2007. The amendments to claims 1, 2, 3, 10, 11, 17, & 18 are accepted.

The objections to the drawings and 112 rejections stated in the previous office action have been withdrawn in view of the amendments.

### ***Response to Arguments***

Applicant's arguments filed 11/21/2007 have been fully considered but they are not persuasive.

In regard to Claims 1, 2, 3, 5, 6, & 9 in view of Huh et al. ("Huh").

The applicant argues that Huh fails to teach a "PWM-IC". The Examiner points out, as stated in the previous office action, this is read on by component 350 of Figure 5. The applicant's assertion that "MOS330 is described as a general MOSFET switching transistor" is correct and points out that its use is the same as applicant's transistor (labeled "FET") as shown in Figure 3. Like the applicant's invention, the general MOSFET switching transistor is pulse width modulated in order to provide power via the transformer. Figure 5 of Huh shows the transistor MOS330 and the transformer (L320) and as is obvious from the picture and as is well known in the art, the switch MOS330 needs to be modulated in order to operate the transformer. If the switch MOS330 was to be held constant on or off, the DC power would simply be applied across the transformer failing to transfer power across the transformer to the secondary side.

Huh teaches the pulsing of switch MOS330 via circuit 350 (See Figure 5) which has been referenced as applicant's "PW—IC" as the circuit of Huh is both an integrated circuit and provides pulse width modulated signals to the switch MOS330. These pulses are further described in Column 9, Lines 15-26 wherein Huh references the MOSFET as "the switching transistor". Again, at Column 10 Line 65 to Column 11, Line 20, Huh describes the "duty control" also referred to as the "duty cycle" which is another technical name for "pulse width modulation".

In regard to Claims 2, 4, 7, 10, 11, 12, 13, and 15.

The applicant argues that Kim fails to teach a PWM-IC driven by the AC power. The Examiner respectfully disagrees. The claim reads "a PWM-IC driven by the AC power" and Figure 3 of Kim clearly shows a single AC input power driving the device. This single AC source (Vin) therefore drives the entire circuit, including the PWM-IC (40). The applicant apparently intends for the claim to recite the PWM-IC having an AC input in which it receives AC power, however such limitation is not currently provided.

In regard to Claim 7

The applicant argues that Kim fails to teach "transmitting a signal to stop operation of the PWM-IC within a predetermined period of time". The Examiner respectfully disagrees. As the applicant pointed out, Kim states at Column 10, Lines 47-53. "When powered off, microcomputer MPU generates substantially equal to a zero potential level... Consequently, photocoupler OPT and power supply control switching transistor Q2 become turned off, turning off an operation of Pulse width modulation

integrated circuit PWM-IC40..." The Examiner notes that in order to turn off the operation of the PWM-IC, Q2 is turned off by a low signal applied to the gate of the transistor. This low signal is the stop signal. Kim further states at Column 9, Lines 55-67, "Power control circuit 60 includes a resistor R7 for loading a signal output from the microcomputer MICOM (70) across its terminal arms, **a photocoupler OPT connected to resistor R7 and disposed to turn on and off in dependence upon a signal supplied thereto...**" The Examiner further notes R7 is directly connected to the microcontroller (70, Figure 6) wherein the "signal" recited above adequately reads on the "signal to stop operation of the PWM-IC".

### ***Claim Objections***

Claim 1 is objected to because of the following informalities:

Claim 1 recited "...power to the power switching unit..." however the amended claim fails to previously recite "a power switching unit" therefore there is a lack of antecedent basis for this claim. The claim will be examined as best understood to mean "power to a power switching unit".

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application

by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1, 2, 3, 5, 6 & 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Huh et al. (US 7,054,169).

In regard to Claim 1

A method of controlling a power supply, having a power switching unit, in an electronic machine using a host connected to the electronic machine, the method comprising:

- Transmitting received alternating current (AC) power (received via input “Vin”, See fig 5) to the power switching unit (read on by 350) and simultaneously transforming the AC power into direct current (DC) power (via rectifier BR310).
- Determining whether the host (200) requests provision of the DC power to the electronic machine (device connected to output Vo (not shown)).
- Driving a pulse width modulation-integrated circuit (PWM-IC) (350) of the power switching unit using the AC power (via BR310, transformer L310 and switch MOS330) in response to determining that provision of the DC power to the electronic machine is requested (See Column 10, Lines 34-65).

In regard to Claim 2

An apparatus for controlling a power supply, having a power switching unit, in an electronic machine using a host connected to the electronic machine, the apparatus comprising

- A power rectification unit (BR310) transforming received alternating current (AC) (via  $V_{in}$ ) power into direct current (DC) power and smoothing the DC power (via C310)
- A power switching unit (350), driven by the AC power and having a pulse width modulation integrated circuit (PWM-IC) that is switched on or off to control provision of the DC power to the electronic machine (200) when the host (load connected at  $V_o$ ) requests provision of DC power to the electronic machine (via the power (or lack of power) drawn by the load)
- An AC power connection unit (read on by the leads connecting the bridge rectifier with the AC source " $V_{in}$ ") receiving the AC power and outputting the AC power to the power switching unit
- A power supply control unit (220) controlling the operation of the power switching unit, regardless of whether power is received by the power switching circuit.

In regard to Claim 3

- Wherein the power rectification unit comprises an electrolytic capacitor that smoothes rectified power and has a discharge line that is grounded to prevent discharge of charges stored in the electrolytic capacitor (See Figure 5).

In regard to Claim 5

- A first node (read on by the bottom AC power connection) connected to an AC power supply source ( $V_{in}$ ) (See figure 5) and a second node connected to the power switching unit ( $V_{cc}$  350) and a resistor ( $R_{312}$ ) between the first node and the second node, wherein the AC power connection unit receives the AC power from the AC power supply source via the first node and transmits the AC power via the resistor to the second node (See Figure 5).

In regard to Claim 6

- Wherein the power rectification unit further comprises a diode (read on by the diode bridge BR310) receiving the AC power from the AC power supply source via the first node and rectifying the AC power, the electrolytic capacitor ( $C_{310}$ ) receiving the rectified power and outputting smoothed DC power to a transformer, without outputting the smoothed DC power to the power switching unit (The Examiner notes that the output of the capacitor is not provided to the switching unit) (See Figure 5).

In regard to Claim 9



- Transmitting a signal to stop operation of the PWM-IC when the host has not requested provision of the DC power to the electronic machine (See Column 12, Line 45 to Column 14, Line 32) within a predetermined period of time [read on by the time constant of capacitor C345, See Column 13, Lines 18-32] [The Examiner notes that an off signal is produced via the offset voltage].

Claims 2, 4, 7, 10, 11, 12, 13, & 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Kim et al. (US 5,961,647).

In regard to Claim 2

An apparatus for controlling a power supply, having a power switching unit, in an electronic machine using a host connected to the electronic machine, the apparatus comprising

- A power rectification unit (80, Fig 6) transforming received alternating current (AC) (via Vin) power into direct current (DC) power and smoothing the DC power (via C1).
- A power switching unit (60 & 40), driven by the AC power and having a pulse width modulation integrated circuit (40) that is switched on or off to control provision of the DC power to the electronic machine (V1, V2, V3) when the host (ie. computer connected to 70) requests provision of DC power to the electronic machine (via 70) (See Column 10, Lines 18-46).
- An AC power connection unit (R6) receiving the AC power (via rectifier 80) and outputting the AC power to the power switching unit (See Figure 6).

- A power supply control unit (70) controlling the operation of the power switching unit, regardless of whether power is received by the power switching circuit (The Examiner notes that the computer will power the power supply control unit (70) regardless of whether the controlled device is powered (See figure 5).

In regard to Claim 4

- Wherein the power supply control unit (MICOM) is driven by power received from the host (100) (See Column 9, Lines 17-30).

In regard to Claims 7 & 15

- Wherein the power supply control unit (70) transmits a signal to stop operation of the PWM-IC when the power supply control unit (70) does not receive a request from the host to provide DC power to the electronic machine within a predetermined period of time (the predetermined amount of time being that of a request of power being made) (See Column 10, Lines 18-65).

In regard to Claims 10 & 12

A circuit for controlling a power supply, having a power switching circuit, in an electronic machine using a host connected to the electronic machine, the circuit comprising:

- A power rectification circuit (80, Figure 6) transforming received alternating current (AC) power into direct current (DC) power and smoothing the DC power (via capacitor C1) a power switching circuit (60), driven by the AC power and having a pulse width modulation integrated circuit (PWM-IC, 40) that is switched

on or off to control provision of the DC power to the electronic machine when the host (ie. computer) requests provision of DC power to the electronic machine (See Column 10, Lines 18-46).

- An AC power connection circuit (R6) receiving the AC power and outputting the AC power to the power switching circuit (60).
- A power supply control circuit (70) controlling the operation of the power switching circuit, regardless of whether power is received by the power switching circuit [The Examiner notes that the power supply control unit (70) is powered by the host, ie. computer 100 (See Column 10, Lines 18-46)].

In regard to Claim 11

- Wherein the power rectification circuit comprises an electrolytic capacitor (C1) that smoothes rectified power and has a discharge line that is grounded to prevent discharge of charges stored in the electrolytic capacitor (See Figure 6).

In regard to Claim 13

- Wherein the AC power connection circuit comprises: a first node connected to an AC power supply source (read on by the connection between the source (Vin) and the rectifier (80), See fig 6); a second node connected to the power switching circuit (read on by the connection between resistors R6 & R8); and a resistor (R6) between the first node and the second node.

- Wherein the AC power connection circuit receives the AC power from the AC power supply source via the first node and transmits the AC power via the resistor to the second node.

In regard to Claim 18

A circuit for controlling a power supply, having a power switching circuit, in an electronic machine using a host connected to the electronic machine, the circuit comprising:

- A power rectification circuit (80) having an electrolytic capacitor (C1), the power rectification circuit transforming received alternating current (AC) power into direct current (DC) power and smoothing the DC power, and the electrolytic capacitor having a discharge line that is grounded to prevent discharge of charges stored in the electrolytic capacitor (See figure 6).
- A power switching circuit (60), driven by the AC power and having a pulse width modulation integrated circuit (PWM-IC, 40) that is switched on or off to control provision of the DC power to the electronic machine when the host (ie. computer) requests provision of DC power to the electronic machine.
- An AC power connection circuit (R6) receiving the AC power and outputting the AC power to the power switching circuit.
- A power supply control circuit (70) controlling the operation of the power switching circuit, regardless of whether power is received by the power switching circuit.

### ***Allowable Subject Matter***

Claims 8, 14, & 16 & 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form for reasons discussed in the Office Action of 8/23/2007.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Cavallari whose telephone number is (571)272-8541. The examiner can normally be reached on Monday-Friday 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Sherry can be reached on (571)272-2800 x36. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Michael J Sherry/  
Supervisory Patent Examiner, Art Unit 2836

Daniel Cavallari

February 5, 2008